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ABSTRACT

An intrinsically motivated behavior is one undertaken and enjoyed for its own sake, apart from external controls or ends. Expectancies are competence cues which focus on an individual's ability without providing objective information for ongoing comparison and competence development. This study focused on the role of affect in mediating the effects of externally communicated expectancies on intrinsic motivation. College students (N=84) were given positive, neutral, or negative mood inductions prior to an expectancy manipulation. Expectancy subjects were given a performance prediction; No Expectancy subjects were not. All subjects worked on two sets of puzzles separated by a midgame questionnaire. Intrinsic motivation was measured during a free choice period. The results showed that arousal emerged as the critical mediator of task interest. Both happy and sad manipulations significantly altered arousal, and arousal appeared to have eliminated typical expectancy effects among both high and low achievers. These findings support a model of intrinsic motivation in which the arousal component of affect is a critical process variable. (NB)

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Affect and intrinsic interest: An arousal mediated model

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An intrinsically motivated behavior is one undertaken and enjoyed for its own sake, apart from external controls or ends (Lepper, 1980). In contrast to previous emphases on cognitive processes (perceived competence and control), the present study focuses on the role of affect in mediating the effects of externally communicated expectancies on intrinsic motivation. Expectancies (e.g., "We predict that you will do well on this task") are competence cues which focus on an individual's ability, without however providing objective information for ongoing comparison and competence development. Individual interpretation of such subjective cues can depend on both stable individual differences (achievement orientation) and induced states (mood).

Harackiewicz, Sansone and Manderlink (1985) have shown that high achievers not only respond positively to the competence information in an expectancy, but also that doing well becomes more important (competence valuation) and raises interest for them. Conversely, low achievers seem to focus on the implied evaluation, with subsequent anxiety and decrements in interest. The affective state of the subject both when the expectancy is received and during task engagement may also determine what information is extracted and how an expectancy is experienced. According to mood maintenance theory (Isen, 1984) positive mood should make positive competence information salient, but negative mood would make negative, controlling aspects prominent. However, Pretty and Seligman (1984) demonstrated that both positive and negative affect induced from a source unrelated to the task eliminated the strong negative effects of reward (external constraint) on intrinsic interest. Since both positive and negative mood inductions elicit similar autonomic arousal (Averill, 1969), we hypothesized that the arousal rather than the pleasure dimension of affect (Russell, 1979) was critical.

To test this hypothesis, subjects were given positive, neutral or negative mood inductions prior to an expectancy manipulation. If both positive and negative mood eliminate typical expectancy effects

across high and low achievers, an arousal mediated model of intrinsic motivation would be supported.

Method

Eighty-four undergraduates were randomly assigned in a Mood Induction (Happy, Sad, Neutral) x Expectancy (Expectancy, No Expectancy) design. Subjects completed the Achievement Scale of the Personality Research Form (Jackson, 1974). Mood was induced with a taped procedure for recalling a past event (Wright & Mischel, 1982) and a modified version of Velten's self-referent statements (Velten, 1968). Arousal and pleasure subscales were given as manipulation checks (Mehrabian & Russell, 1974). The puzzles were drawings in which the name Nina is hidden (Harackiewicz & Manderlink, 1984). Expectancy subjects were given a performance prediction (81st-99th percentile). No Expectancy subjects were not. All subjects worked on two sets of puzzles separated by a mid-game questionnaire which repeated the affect subscales. The experimenter then scored the puzzles and told all subjects that they had scored above the 80th percentile. Intrinsic motivation was measured during a free choice period.

Results

Manipulation checks showed that both happy ($M=31.86$) and sad ($M=27.43$) mood groups were more aroused than neutrals ($M=25.25$), $F(2,81)=4.65$, $p<.01$. Happy subjects were the most pleased ($M=32.25$) and sad the least ($M=23.50$); neutral ($M=26.36$), $F(2,81)=13.98$, $p<.001$. Expectancy subjects expected to do better (7.00) than No Expectancy subjects (6.10), $F(1,82)=7.10$, $p<.01$.

Following Judd and Kenny's guidelines for mediation analysis (1981a, 1981b), a process analysis was undertaken to determine whether the two experimental variables (Mood condition, Expectancy) influenced the hypothesized mediators (Arousal, Pleasure), and whether these in turn were related to intrinsic motivation as measured by free choice time spent on Ninas (Time). The effects of Mood were tested with two orthogonal contrasts. A Mood contrast compared the two mood groups to the neutral control (Happy = +1, Sad = +1, Neutral = -2). A Happy-Sad contrast compared the two mood groups (Happy = +1, Sad = -1, Neutral = 0). The regression model also included the remaining independent variables - Expectancy (Expectancy = +1, No Expectancy = -1) and

Achievement (measured continuously) - and interactions. These analyses revealed that Pleasure did not mediate interest, and the final model reported below only includes the determinants and consequences of Arousal.

The final mediation link was interactional, with the independent variables and Arousal interacting significantly in affecting interest. Path models were based on three regression equations. Due to significant interactions of Achievement with mediating and independent variables, two diagrams of the final model were drawn: Figure 1a for high achievers and Figure 1b for low.

On Arousal, the Mood contrast x Expectancy x Achievement interaction was significant, $F(1,74)=7.86$, $p<.006$. This showed that the expectancy had no effect on arousal (.02) for low achievers in either mood condition, but lowered it for neutrals (-.66). Among high achievers, the expectancy raised arousal in the neutral groups (+.42), while lowering it somewhat for mood groups (-.22).

On Time, the main effect of Arousal indicated that the more aroused a subject was, the more free time was spent playing with Ninas, $F(1,69)=4.10$, $p<.05$, beta = +.25. However, a significant three-way interaction of Arousal x Expectancy x Achievement, $F(1,69)=7.42$, $p<.008$, beta = +.33, showed that this effect occurred primarily in two conditions: low achievers without expectancies (+.58), and high achievers with expectancies (+.58).

There was a direct, unmediated effect of Expectancy interacting with Mood Contrast on Time, $F(1,69)=5.76$, $p<.02$. An Expectancy manipulation appeared to increase the time neutral subjects spent on Ninas (+.42), while having a lesser effect in mood conditions (-.14)

Discussion

In a situation where competence was evaluated, arousal, as predicted, emerged as the critical mediator of task interest. Both happy and sad manipulations significantly altered arousal, and arousal appears to have eliminated typical expectancy effects among both high and low achievers. The Arousal "loop" in our path diagrams (from Expectancy to Arousal to Time) explains the results.

Among neutral subjects, receiving an expectancy not only makes high achievers more aroused,

but within an expectancy condition, arousal is critical to interest. An expectancy fails to increase arousal for happy and sad high achievers who are already aroused when they receive the expectancy. The cognitive theory of emotions (Schachter & Singer, 1962) suggests that the arousal elicited by the expectancy manipulation may be attributed to the already existing and labeled "happy" or "sad" mood, thereby sapping the expectancy of its power. Of additional theoretical interest, arousal thus creates a path comparable to that of competence valuation. Previous work has shown that in expectancy conditions, high achievers not only care more about doing well, but that within an expectancy condition, importance is critical to interest. This suggests that arousal may be picking up the affective component of competence valuation (Harackiewicz et al.,1985).

Similar parallels exist between arousal and importance among low achievers in expectancy conditions. Harackiewicz et al. (1985) have shown that expectancies make low achievers care less about doing well, but importance does not appear to moderate interest as it does for high achievers. Our data indicate that expectancies make low achievers in the neutral condition less aroused, but in expectancy conditions, arousal has no effect on subsequent interest. Low achievers in the neutral condition, however, do become aroused in no expectancy conditions, where being aroused does appear more critical to interest. An expectancy had no effect on arousal for happy and sad low achievers who already experienced arousal. In sum, our analysis shows that high levels of arousal are important to interest, but that high and low achievers arrive at these critical levels differently.

The present study then supports a model of intrinsic motivation in which the arousal component of affect is a critical process variable. The relative impact of the process varied according to person by situation suggesting the complexity of the phenomena under investigation.

Note

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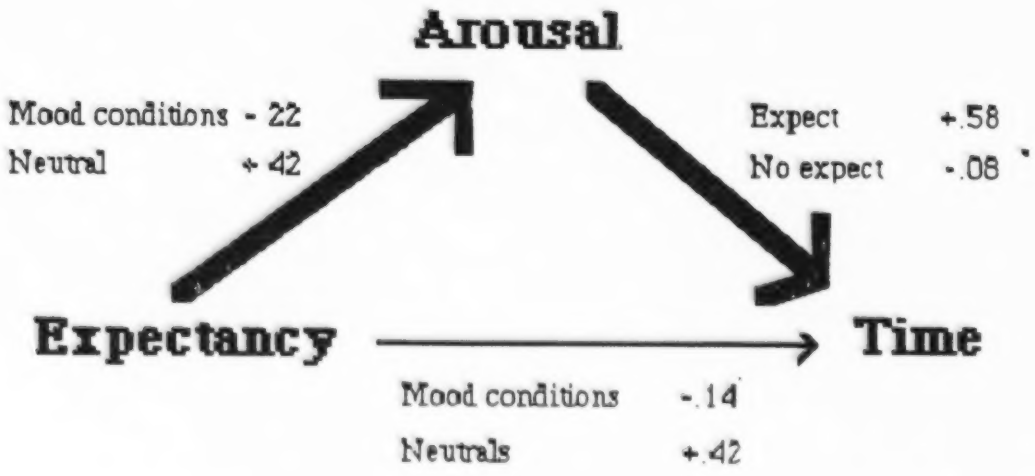

Figure 1a. Path mediation model for subjects high in achievement orientation. Bold-face lines indicate interactions with achievement; solid lines represent significant paths.

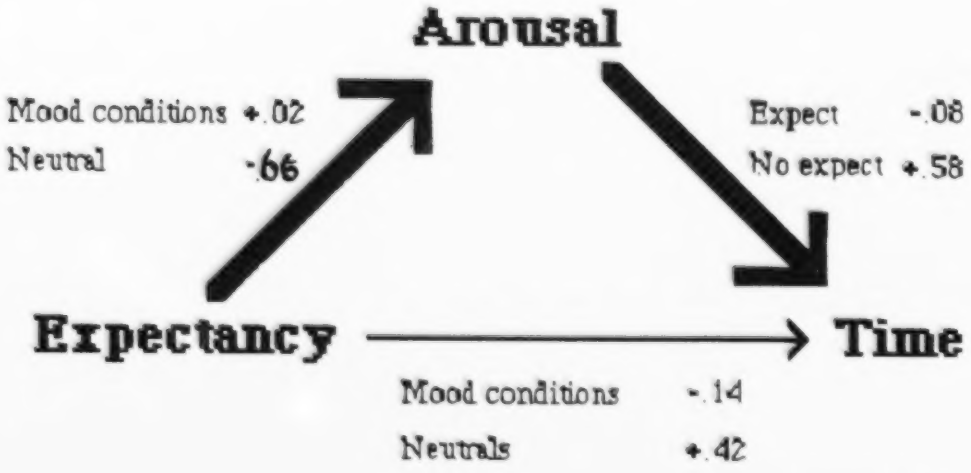

Figure 1b. Path mediation model for subjects low in achievement orientation. Bold-face lines indicate interactions with achievement; solid lines represent significant paths.